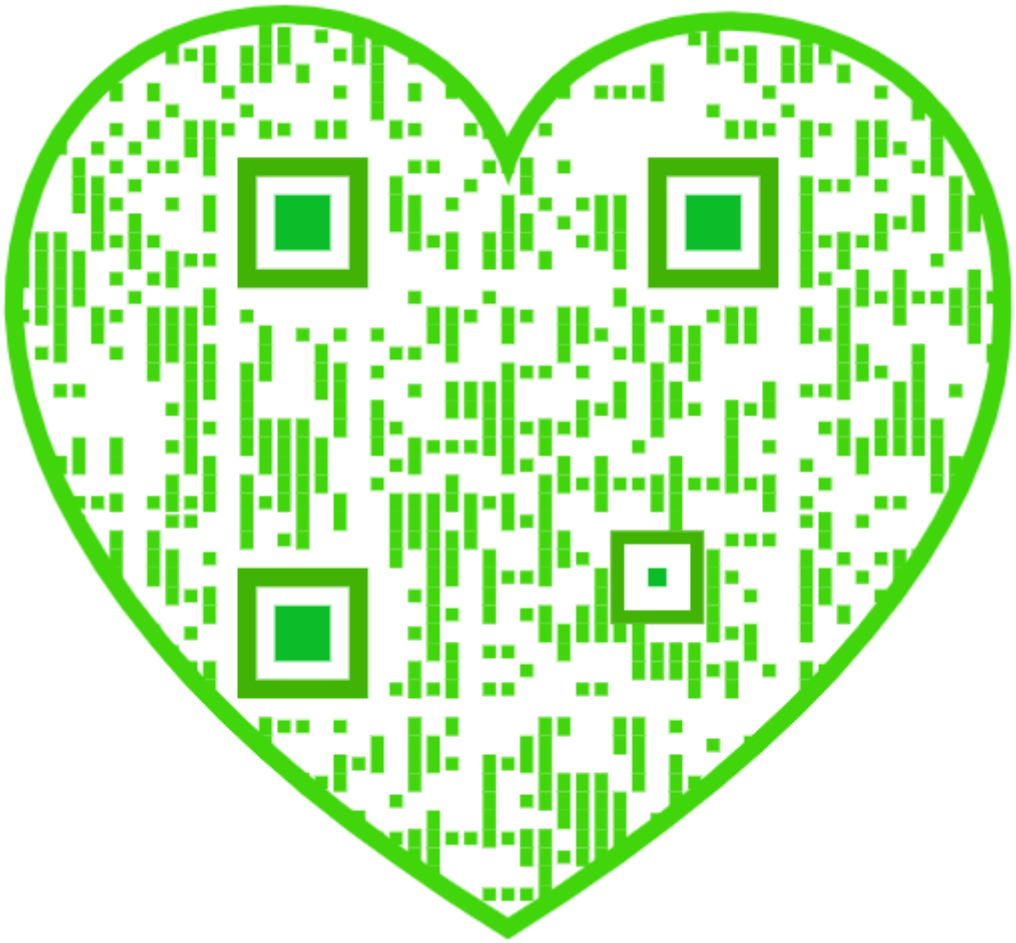
Master in Artificial Intelligence

Monitoring and Maintenance V



Purpose

The purpose of the section is to help you learn how to monitor and maintain the deployed models to become a Successful Artificial Intelligence (AI) Engineer

At the end of this lecture, you will learn the following

- **An example of how to monitor the deployed models to ensure they continue to perform well over time, and update or retrain them as needed to adapt to changing conditions or requirements**

An example of how to monitor and maintain the deployed models

Monitor the deployed models

Ensure they continue to perform well over time

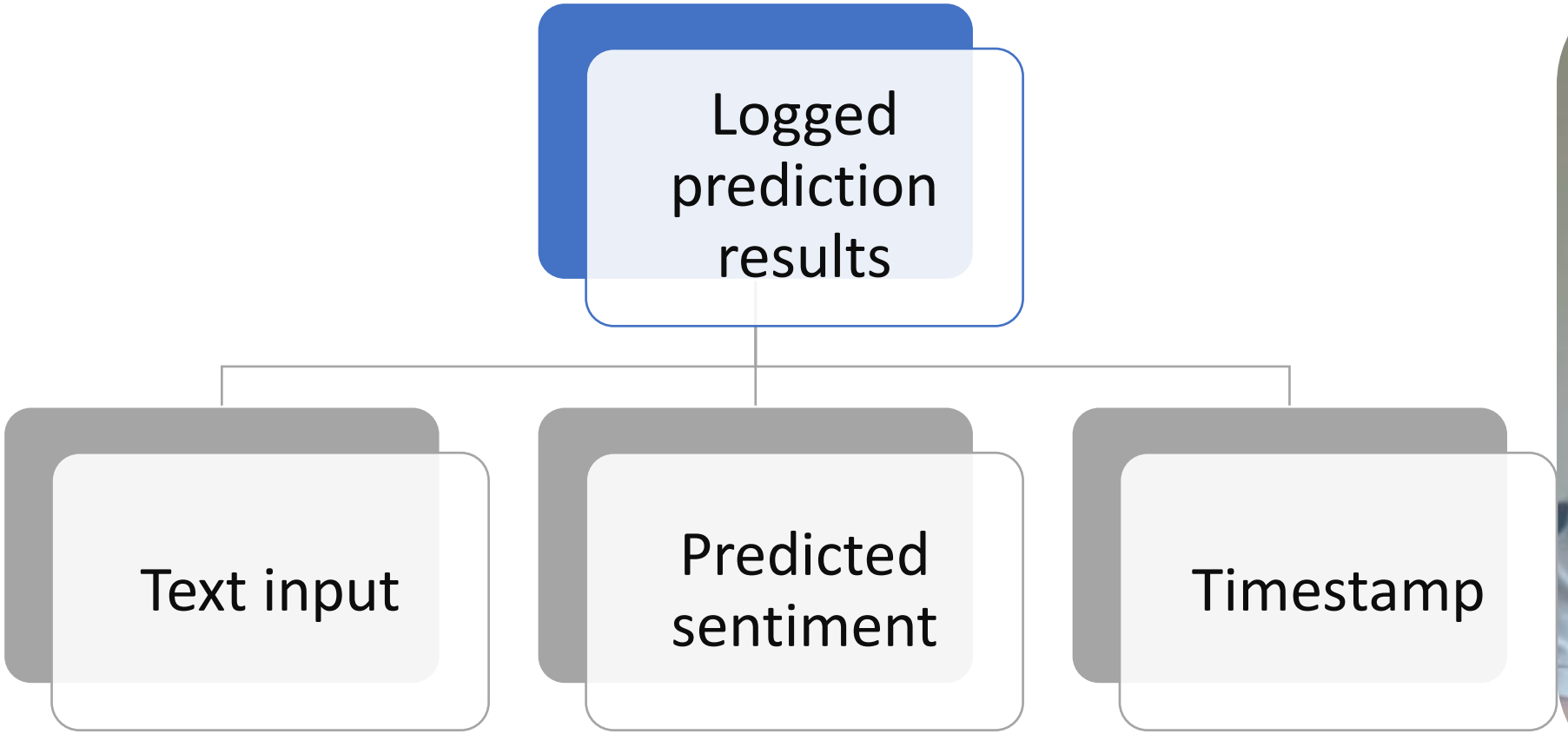
Update or retrain them as needed

Adapt to changing conditions or requirements

Defined Key Performance Metrics

Key Metrics	Historical Performance	Threshold/ Benchmark
Accuracy		
Precision		
Recall		
F1 score		

Real-time Monitoring



Data Drift Detection

Compared incoming data distribution with historical data

Used Kolmogorov-Smirnov test to detect changes in data distribution

Visualized histograms and density plots of input features to identify drift

Model Drift Detection

Tracked model performance metrics (accuracy, precision, recall) over time

Used concept drift detection techniques to detect changes in model behavior

Implemented ensemble monitoring to compare model predictions with ensemble members

Anomaly Detection

Monitored prediction errors and residuals for anomalies

Used outlier detection techniques

Identified unusual patterns in model predictions

Thresholds and Alerts

Defined thresholds for performance metrics and drift detection metrics

Triggered alerts or notifications when metrics exceed predefined thresholds

Feedback Loops

Collected user feedback on model predictions

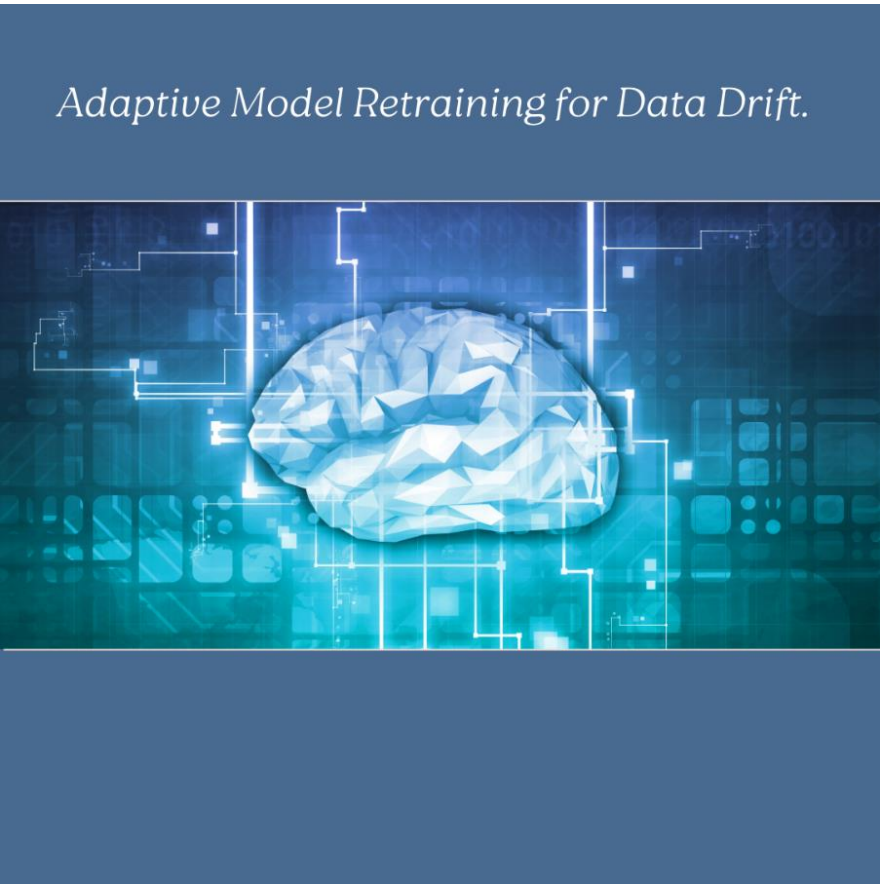
Used feedback to

- Validate predictions
- Identify misclassifications or errors

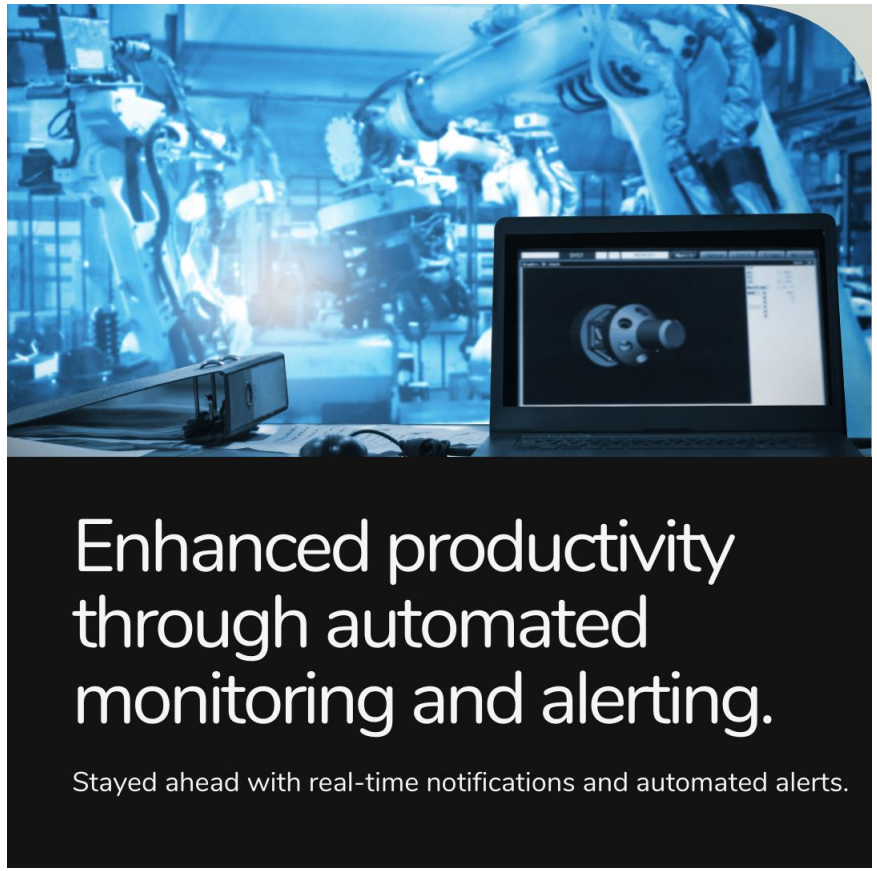
An example of how to monitor and maintain the deployed models

Optimized Monitoring Parameters with Contextual Intelligence!

Model Update or Retraining



Integration with Deployment Pipeline



Documentation and Reporting

Documented

- Monitoring procedures
- Thresholds
- Actions taken in response to drift detection

Generated

- Periodic reports summarizing
- Model performance
- Drift detection results

An example of how to monitor and maintain the deployed models

Monitor the deployed models

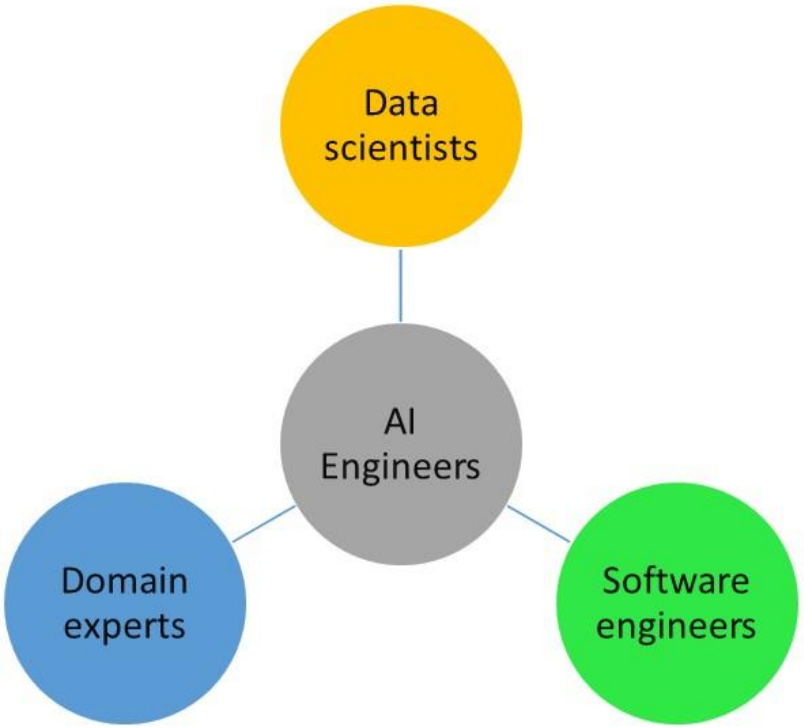
Ensure they continue to perform well over time

Update or retrain them as needed

Adapt to changing conditions or requirements

What is next?

Collaboration



Develop comprehensive AI solutions

Address real-world problems effectively

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